

CLAIMS

1. A method of joining a pair of overlapping workpieces, the method comprising:

disposing a filler material at a gap between the pair of overlapping workpieces;

applying a pressure to at least one of the workpieces so that the filler material is crushed; and

joining the two workpieces together in a region defined by the filler material.

2. The method of claim 1, wherein the filler material has an initial density and after the pressure has been applied, the filler material has a final density, wherein the final density is greater than the initial density.

3. The method of claim 1, wherein an initial density of the filler material is greater than or equal to 2%.

4. The method of claim 1, wherein an initial density of the filler material is greater than or equal to 2% and less than or equal to 50%.

5. The method of claim 1, wherein, after the pressure is applied, a final density of the filler material is greater than or equal to 70%.

6. The method of claim 1, wherein, after the pressure is applied, a final density of the filler material is greater than or equal to 90%.

7. The method of claim 1, wherein the filler material is a porous material.

8. The method of claim 7, wherein the porous material includes a honeycomb structure or a fibrous material.

9. The method of claim 1, wherein the filler material is made from a material whose compatability has been established by the American Welding Society.

10. The method of claim 1, wherein the filler material is made from a material that is metallurgically compatible with a material of the workpieces.

11. The method of claim 1, wherein joining is at least one of brazing, gas metal arc welding, gas tungsten arc welding, plasma welding, electron beam welding and laser welding.

12. The method of claim 1, wherein applying a pressure includes clamping the pair of overlapping workpieces together.

13. The method of claim 1, wherein disposing the filler material includes:

placing the filler material on a first workpiece; and

placing a second workpiece on the filler material.

14. A welded joint comprising:

a pair of overlapping workpieces; and

a filler material that is made from a material that is metallurgically compatible with the material of the workpieces, and the filler material is a porous material.

15. The joint of claim 14, wherein a density of the filler material is greater than or equal to 70%.

16. A welded joint made by the method of claim 1.

17. An automobile with a welded joint made by the method of claim 1.